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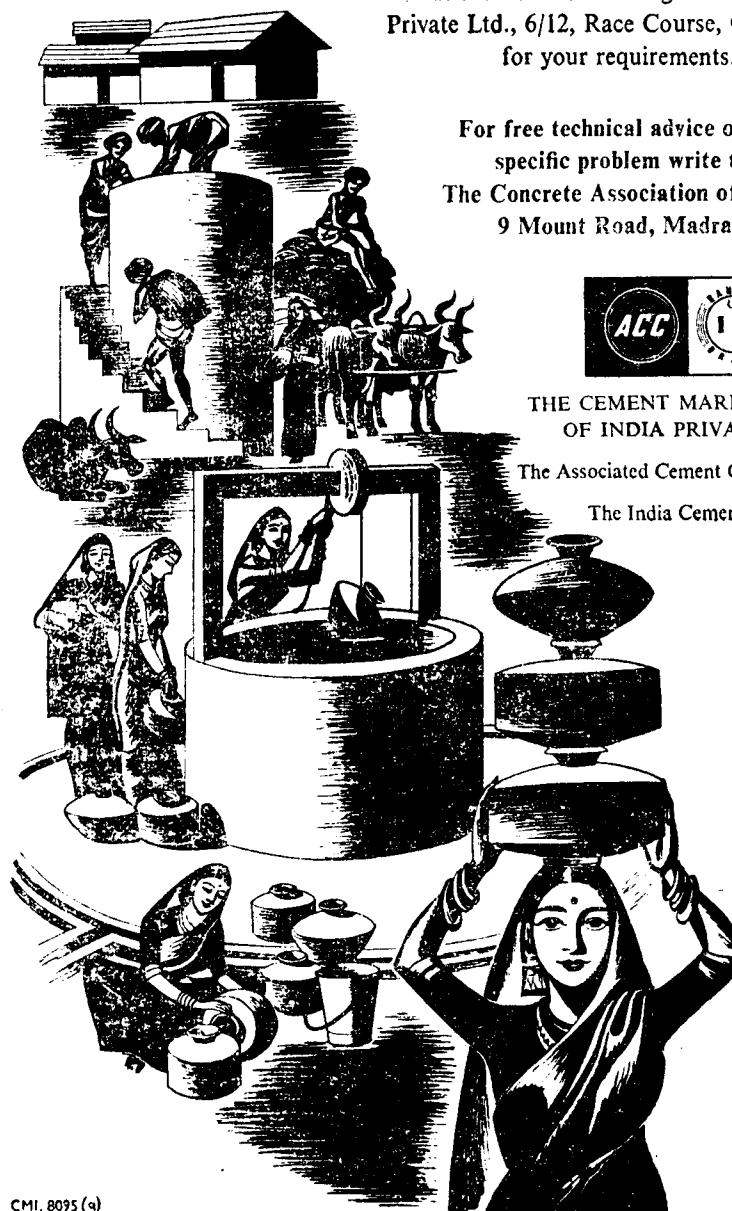
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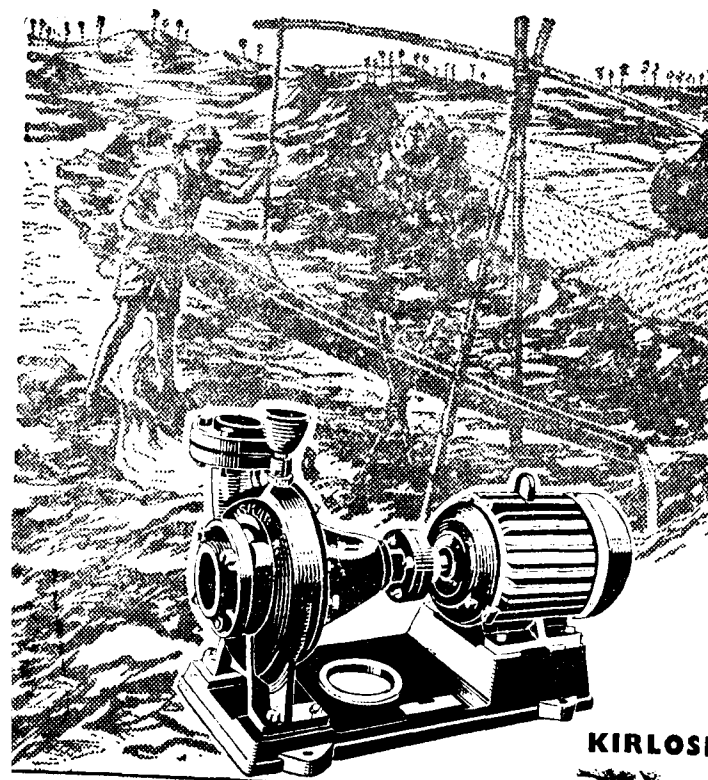
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Editorial

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The Third Five Year Plan: The outline of Third Five Year Plan issued by the Planning Commission during the month involves a total expenditure of Rs. 10,208 crores in the public (Rs. 6208 crores) and private sectors (Rs. 4000 crores) with the aim of increasing the national income by five percent every year of the plan period. The objectives envisaged are "self-sufficiency in food grains and increased agricultural production to meet the requirements of industry and exports, to expand basic industries like steel, fuel and power and establish machine building industries to meet future industrial development within 10 years or so mainly from the country's resources, to utilise to the fullest extent possible the man power of the country and to substantially expand employment opportunities, and to bring about a reduction of inequalities in income and wealth and more even distribution of economic power". Self sustaining growth is aimed by a balanced development both in Agriculture and Industry. Without industrialisation, increased income and employment is not possible. Industrial development is not possible without a marked increase in agricultural production. It is gratifying to note that for increasing agricultural production to the highest level possible, provision has been made for an outlay of Rs. 1075 crores in public sector for Agriculture and community development and Rs. 650 crores for major and minor irrigation works besides Rs. 800 crores in private sector.

Agricultural production is to be stepped up by 30 to 33 percent, including increases in food grains, cotton, oilseeds, sugarcane and jute. Increased production in fruits, vegetables, milk, fish, meat, eggs, coconut, arecanut, cashewnuts, pepper, cardamom, tobacco, lac and timber, are also contemplated. The net irrigated area is proposed to be increased to 90 million acres by the end of the Third Plan period, as against 90 Millions in the Second Plan period. Dry farming techniques are to be applied in about 40 million acres and soil conservation measures in 13 million acres. The utilisation of nitrogenous fertilisers is to be increased from 3.6 lakhs tons nitrogen



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to 10 lakhs tons by 1965—66. Plant protection measures are to be applied over 75 million acres. The Community Development Programme is to cover the whole rural areas in India by October 1963. The co-operative movement is to be developed to play a dominant role in increasing agricultural production.

The public sector outlay in the Third Plan nearly amounts to the total of the First and Second Plans. Larger sums are to be spent on agriculture in the Third plan compared with the first and second plans. There is no question of the need for large expenditure on agriculture in view of its importance in Indian economy. But can the outlay be spent usefully and well? Considering the large expansion of Agricultural departments with several posts vacant, the large number of freshmen in the field, the lack of physical facilities, the existence of methods and procedures not geared for meeting the increasing tempo of expenditure and activity under the Plan, one would feel the allotment were less. At least a more gradual increase from the beginning to the end of the Plan period and even extending to the next, some of the programmes, not of an urgent nature, though considered important. Progress during the first and second plan periods should be more critically evaluated before formulating detailed proposals for the Third plan giving due weight to available resources in men and material, and existing organisation and methods. The above will avoid waste and help in purposeful utilisation of plan allotment.

Cultivation of cotton in the rice-fallows of Madras State — The need for a proper approach

by

C. K. RAMACHANDRAN, S. KAMALANATHAN and R. S. ANNAPPAN

Cotton in rice-fallows: The cultivation of Cambodia cotton as off — seasonal crop in the rice-fallows of Madras State is of recent origin. The experiments conducted in Madras state from the year 1948 (Balasubramanian, 1952) have shown that cotton crop planted after the harvest of paddy in rice-fallows grows well, flowers normally, sets fruits freely and yields upto 1,700 lb. of seed cotton per acre, by the middle of July i. e., within five months from the date of sowing, if properly attended to. It is reported (Neelakantan *et al*, 1959) that by judicious application of fertilizers and by adopting suitable spacing the yield of P. 216 F Cotton could be increased considerably. It has been established (Kesava Iyengar *et al*, 1958) that the cultivation of cotton as an off-seasonal crop in the rice-fallows does not depress the yield of paddy, provided the paddy crop receives the manurial doses normally given to it and the available cotton residue only helps to augment the supply of green matter to the paddy crop. With all the proved merits for the successful utilization of rice-fallows for growing cotton, the cultivation of cotton in rice-fallows has not made much progress.

If any substantial increase in the production of cotton is to be achieved, the rice-fallows offer the only scope of extending the area under cotton.

Reasons for short fall in the extension of area: The factors that have contributed for the low acreage under cotton in rice-fallows (4,143 acres as per Season and Crop Report of the Madras State 1957—'58) may be enumerated as follows:

1. Lack of irrigation facilities in the summer season:
2. Marketing facilities; and
3. The need for proper approach.

Discussion and suggestions: Cotton is raised in rice-fallows after the harvest of paddy and grown essentially as an irrigated summer crop. Though the cotton crop comes up well with the available soil moisture, it suffers from drought at the crucial periods of flowering and bolling.

The cotton crop would thus require four or five irrigations for successful cultivation. As a large part of the rice-fields are in the delta area and fed by canal from the rivers they are devoid of any wells and would not afford the necessary irrigation facilities during the summer months. This problem of irrigation needs to be solved by sinking bore-wells, filter points or even open wells.

Regarding marketing facilities, it is a vicious circle. Unless there is a ready market locally, for the agricultural commodity produced, the area under the particular commodity will show a downward trend. Unless and until a larger area is grown increasing the production to a large marketable surplus, it is difficult for the market to get established. This is the case with cotton also in new areas recently brought under cotton in the districts of Thanjavur, North Arcot and Chingleput. To overcome the problem in marketing of cotton in Thanjavur District, a Co-operative Ginning Factory has been established and is functioning at Aduthurai. As the area under P. 216 — F Cotton is increasing in Manaparai area of the adjoining Tiruchirappalli District, a branch of the Thanjavur District Co-operative Cotton Marketing Society Ltd., is being established at Manaparai. The South Arcot District Market Committee with its branches spread throughout the District is dealing in cotton along with groundnut and gingelly. Any cotton grown in the district or in the adjacent districts of North Arcot and Chingleput could be easily marketed through this Committee at its Villupuram branch, which is the main centre of cotton trade, in South Arcot District. The cotton grown may also be arranged to be disposed of through the Cotton Market Committee, Tirupur. Many of the cotton brokers and agents are periodically visiting the important cotton growing villages and the needy ryots may avail of their services. Further, when larger areas of rice-fallows are brought under cotton, the production of cotton increases and the problem of marketing would also get solved automatically.

When both the problems of irrigation and marketing are thus solved, what is left over is the proper approach. This may be classified under three heads or classes of people interested in cotton cultivation. They are (i) the Grower; (ii) the Research Worker and (iii) the Extension Worker.

The Grower: The rice grower is conservative and has been accustomed to raise paddy which yields him without much labour, care and intense cultivation. He finds it hard to change over his

habit. He should try to adjust himself to the changing needs of the society. The demands are many and varied and are ever increasing, not only for himself but for the country at large. The rice grower should change his outlook and take up to better and improved farming system. The maxim "He who grows two blades of grass where one grew before does more service to humanity" shall be true in the case of the rice-farmer who raises cotton as an off-seasonal crop in the rice-fallows.

A few of the enterprising ryots try to raise cotton in wet lands after the harvest of paddy and if the cotton crop is not successful, they naturally give up cotton cultivation. The failure of the cotton crop not only disheartens the grower but also discourages others in the vicinity from taking to cotton cultivation. The failure of cotton crop is mainly due to lack of care and proper attention. The ryot who takes up to cotton cultivation for the first time should acquaint himself with the methods of cultivation and any lack of knowledge in this regard is bound to seriously handicap the grower resulting in the failure of the crop. The ryot is requested to contact often the agricultural extension worker and get his guidance. This free consultation will go a long way in the successful cultivation of cotton.

The stiff clayey soil and the peculiar conditions prevailing after the harvest of paddy in the delta area present certain problems in the cultivation of cotton, in ensuring efficient germination and good stand which is the primary step in the successful cultivation of a crop. To get over this, the following practical hints are suggested.

It is not unusual to leave stubbles 4" to 6" high, while harvesting the paddy crop. This will interfere with the germination of seed and subsequent growth of seedlings. It is essential, therefore, that the paddy crop has to be harvested close to the ground, leaving as short a stubble as possible.

It is always desirable to plant paddy in lines, so that after the harvest of paddy, the cotton seeds could be dibbled in lines between the paddy stubbles, without much difficulty or extra labour.

It is advisable to plan the raising of paddy in such a way that its harvest is over before the end of January or the middle of February at the latest.

Do not wait to plough the land after the harvest of paddy. Early planting of cotton gives better yields. So, sow cotton early.

The soil should not be too wet at the time of sowing cotton and should be in a stage of gradual drying.

Dibble the cotton seeds in lines. Line sowing requires lower seed rate and effects a saving in seed requirement. It facilitates the proper placement of the seed ensuring uniform germination and good stand of the crop. It enables easy filling up blanks, thinning, irrigation, and intercultural operations and also admits the use of labour saving implements and thus saves cost of cultivation.

Dibble the seeds in between the rows of paddy stubbles.

It is essential to secure a uniform germination and good stand. The soils of the delta area are usually clayey. To ensure a good stand, dibble three or four seeds in small holes of one inch depth made with the finger or a small peg. The seeds may be covered with earth if it is soft or with silt or wet sand or even saw dust if the soil is of stiff clay and hard.

Sowing of three or four seeds per hole, no doubt increases the stand considerably. Blanks, if any should be filled up within a week after sowing. Filling up blanks later has proved to be of little benefit and does not contribute to increased yields. Dribbling the seeds at uniform depth ensures good germination and placing the seeds within an inch from top soil enhances the germination capacity.

Thin early the unwanted plants. Plants are removed easily when young. Late thinning affects the other standing plants by disturbing their root system and also causes the loss of soil moisture.

On account of very hot and dry weather and lack of sufficient moisture during the summer months, plants may show signs of temporary or permanent wilting. Wilting causes intense shedding. If too severe, it may lead to death. Irrigate the crop when it shows signs of such temporary wilting.

In low lying areas, and in poorly drained or badly irrigated lands, the soil is often saturated with water. In such conditions, the cotton crop puts forth profuse and excessive vegetative growth with

a limited number of flowers and bolls which are subject to shedding on account of excessive soil moisture. In such cases, proper drainage and regulated irrigation are very necessary. Topping plants may prove beneficial when they put on heavy vegetative growth.

The Research Worker : If properly planned, it is possible to grow cotton in wet lands after the harvest of *Thalady* or the "second crop" also. It is advisable to evolve a paddy strain shorter in duration for the *Thalady* crop. Similarly, a cotton strain shorter in duration than the present P. 216-F cotton will prove to be useful in such areas.

The manurial trials hitherto conducted on P. 216-F cotton in the rice-fallows were confined only to the application of nitrogen in varying doses. The requirements of phosphoric acid and potash have not been ascertained. It is essential, therefore, to conduct systematic trials to find out the optimum manurial schedule for cotton in rice-fallows. Similarly, the agronomic practices best suited for increasing the yields and the monetary return therefrom, should be conducted and made known.

It is also advisable that the Research workers contact the cotton growers and inspect their fields personally, so that they can have a better appreciation of the field problems. The problems and difficulties of the growers should guide their attitude towards research. Only by observation of the work in the field they would be able to improve the farmers' agronomic practices.

The Extension Worker : The extension workers form a vital link between the research workers and the farmers. The extension workers should move with the ryots closely and should possess initiative and tact. They should contact the ryots often and inspect their fields giving technical advice and guidance. They should be posted with the latest development in cotton cultivation. There are a number of findings of research workers which are of the practical value and which have not reached many of the farmers. The extension workers should transmit the fruits of research to the cultivators on a field scale and at the same time study their problems and transmit them to the research workers for solution.

The extension workers should ascertain from the farmers their requirements of cotton seeds and stock them sufficiently in advance of the sowing season, so that the seeds are readily available at the

sowing time. Failure to do so has compelled the farmers to go in for the seeds from unselected bulks and in new areas where there are no cotton seed merchants, many of the ryots have even abandoned the idea of growing cotton for want of seeds during the season.

The cotton seed is likely to deteriorate in viability, if kept in an excessively moist condition or for long periods. It is essential, therefore, to dry the seeds periodically and store them free from pests and rodents.

In addition to supplying the seeds and pesticides and arranging for application of fertilizers and marketing of cotton and giving technical advice and guidance, the extension workers should also demonstrate the improved methods of cultivation. A few of the progressive ryots may be selected in each village and the improved methods of cultivation and the performance of the cotton crop in the newly introduced area should be demonstrated in their fields. Such demonstrations of successful cultivation of cotton in new areas will induce the fellow farmers to take up cotton cultivation and the area under cotton will gradually and spontaneously increase.

The extension workers instead of concentrating their efforts in the known tracts should also explore new areas where cotton could be cultivated successfully, as an off-seasonal crop. While the attention was concentrated in Thanjavur Delta for growing P-216 F cotton, the area under the short duration cotton gradually increased in and around Manaparai of Tiruchirapalli District. This is an example to show the necessity for exploring new areas and regions. The regions irrigated by the rivers and rivulets which are filled and flooded during the North-East Monsoon like Vellar, South Pennar, Gadilam, Palar etc., may be explored. Anicuts have been constructed across these rivers, feeding the wet lands direct through canal irrigation or filling up a chain of tanks and helping indirectly the tank-fed wet lands. On account of the vagaries of monsoon only one rice crop is taken normally in these regions. The water in the tanks and in the canals is not sufficient to raise a second paddy crop. Such areas afford immense potentiality for raising short duration cotton crop after the harvest of paddy.

Thus, the extension worker should concentrate on the two-fold problem of establishing the cotton crop in new areas and to increase the production of cotton in the already existing areas.

Conclusion: When all the three categories, the Farmer, the Research Worker and the Extension Worker connected with cotton cultivation follow the proper approach, then the problem of cotton cultivation as an off-seasonal crop in the rice-fallows of Madras State could be easily solved and the production of 4.5 lakhs of bales of cotton by the Second Five Year Plan period will be well within our reach.

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OBITUARY

We deeply regret to announce the sudden demise of **Sri K. P. Ananthanarayanan, M.A.**, Retired Government Entomologist on 28-7-1960. We convey our heartfelt condolences and deep sympathies to the members of the bereaved family.

Effect of Weedicides on Motha (*Cyperus rotundus*) and Bathua (*Chenopodium album*) in Wheat Crop

by
S. NEZAMUDDIN, Agronomist, Bihar, Sabour
and

L. K. PRASAD, Senior Agronomical Assistant.

Efficient weed control forms an integrated part of the increased crop production. The introduction of selective herbicides of synthetic hormone group has opened a new chapter for the efficient weed control in the advanced countries than the old traditional methods of cultural and mechanical weeding practices which are time as well as labour consuming methods. The enormous research progress in these field of works have been recently reviewed by Ennis (1955). Considerable interest has been developed in India recently and the recent progress on chemical weed control has been reviewed by Verma and others (1958).

Wheat is an important cereal crop of the alluvial tract of Bihar which suffers from various types of weeds. Motha (*Cyperus rotundus*) and Bathua (*Chenopodium album*) are the most common weeds of wheat crop in Bihar. Wheat crop in Bihar is either sown behind the plough or broad cast which restricts its weeding by means of implements due to close growing of wheat plants. Hand weeding has been found out to be uneconomic and hence the cultivators do not generally weed out the wheat crop. Hoeing may also bring out some deeply buried weed seeds on the surface which may thrive with the favourable weather condition. Apart from this, hand weeding may as well damage the roots of wheat crop being grown very close to each other.

Hence the experiments were conducted at Sabour to find out suitable and cheap method of weed control by means of available selective weedicides which may be effective and may as well increase the wheat yields.

Methods and Materials: The experiments have been conducted at Sabour during the year 1957-'58, 1958-'59 infested with the above two weeds. The weedicides used were Fernoxone, Chloroxone, Spontox, and Tropotox in two doses $\frac{3}{4}$ lb. and $1\frac{1}{2}$ lb. of the acid equivalent of the chief active ingredient per acre. Two standard checks of control (no weeding) and one hand weeding were kept to

measure effect of weedicides on the control of weeds as well as on the yield of wheat. Wheat was sown in furrows behind the plough at the normal seed rate of 40 seers per acre. The fertilizers were applied at the time of sowing in furrows at the rate of 40 lbs. N and 40 lbs. P_2O_5 per acre in the form of Ammonium Sulphate and Single Super Phosphate respectively.

The spraying in each year was done three weeks after sowing in 100 gallons of water per acre. The number of weeds in three fixed quadrat of 2' x 2' distributed at random in each plot of the experiments were counted in both the years before spraying and after one month of spraying.

The experimental design followed was Randomised Block with four replications. Analysis of variance and covariance have been used to assess the effects of treatments on the different attributes recorded.

Experimental Findings: A. *Weeds and the effects of Weedicides:* In addition to the two dominant weeds, Motha (*Cyperus rotundus*) and Bathua (*Chenopodium album*) a few plants of *Vicia Sp.* and Banpiyaji (*Asphodelus tenuifolius*) were also observed.

Motha: The average number of Motha per quadrat of 2' x 2' at the time of spraying and one month after spraying are presented in the following table:—

TABLE I
Average Number of Motha in fixed quadrat of 2' x 2'.

Treatments	1957-'58			1958-'59		
	Before spray- ing (x)	After spray- ing (y)	P. C. reduc- tion or increase	Before spray- ing (x)	After spray- ing (y)	P. C. reduc- tion or increase
1. Fernoxone $\frac{3}{4}$ lb.	56.75	33.75	— 40.2	13.75	13.75	0.00
2. Fernoxone $1\frac{1}{2}$ lb.	99.50	29.50	— 69.1	19.50	20.25	+ 3.8
3. Chloroxone $\frac{3}{4}$ lb.	80.75	33.25	— 58.8	10.50	22.75	+ 116.6
4. Chloroxone $1\frac{1}{2}$ lb.	90.00	34.50	— 62.5	9.75	13.50	+ 33.3
5. Spontox $\frac{3}{4}$ lb.	42.75	30.50	— 28.6	12.25	17.25	+ 40.8
6. Spontox $1\frac{1}{2}$ lb.	57.00	23.75	— 58.2	12.75	14.75	+ 15.7
7. Tropotox $\frac{3}{4}$ lb.	80.00	51.25	— 37.5	12.25	17.50	+ 42.9
8. Tropotox $1\frac{1}{2}$ lb.	77.08	80.00	— 22.8	20.00	24.25	+ 21.3
9. Control	72.00	70.00	— 2.8	13.00	32.00	+ 146.2
SEm	± 7.72			± 3.98		
C. D.	22.45			...		

There is a wide variation in the occurrence of *Motha* in the various treatments both at the time of spraying and after one month of spraying. The weed population after one month of spraying has been considerably reduced in the first year as compared to control. In the second year, the population of *Motha* after one month of spraying has increased, but the percentage increase is less in all the weedicide treatments than that of control. In the first year, the higher dose of $1\frac{1}{2}$ lb. has shown greater percentage reduction in all the weedicides. In the second year when the population count shows an increase in the number, the higher doses show a lesser increase than the lower doses of the weedicides.

As there is great variation in the weed population both at the time of spraying and after spraying data were analysed by analysis of variance and covariance. The test of significance of the adjusted treatments, means of the population count after one month of spraying are presented below :—

TABLE II
Test of Significance of adjusted treatments

Source	1957—'58				1958—'59		
	D. F.	S. S.	M. S.	Ratio	S. S.	M. S.	Ratio
Treatment + Error	31	12459.1	...	...	2124.3	...	...
Error	23	4763.5	207.1	4.64	1022.4	44.5	3.10
Treatment	8	7696.6	962.1	...	1102.0	137.8	...

The test shows to be significant for both the years. The adjusted population count are given below :—

TABLE III
Adjusted number of *Motha* after one month of spraying.

Treatments		1957—'58	1958—'59
1. Fernoxone	$\frac{3}{4}$ lb.	36.25	13.36
2. "	$1\frac{1}{2}$ lb.	25.93	16.20
3. Chloroxone	$\frac{3}{4}$ lb.	31.99	24.92
4. "	$1\frac{1}{2}$ lb.	31.80	16.19
5. Spontox	$\frac{3}{4}$ lb.	35.19	18.21
6. "	$1\frac{1}{2}$ lb.	26.21	15.36
7. Tropotox	$\frac{3}{4}$ lb.	49.80	18.46
8. "	$1\frac{1}{2}$ lb.	59.21	19.86
9. Control		70.11	32.44
S. Em.		± 7.30	± 3.42
C. D. @ 5%		21.35	10.01

The adjusted values of the population of *Motha* indicates that all the weedicides except Tropotox have significantly controlled them in the year 1957—'58 and in 1958—'59 all the weedicides have controlled them significantly.

Bathua: The population count of *Bathua* at the time of spraying and after one month spraying are given below (Table IV) along the percentage of increase or decrease from the time of spraying to population count after one month of spraying.

TABLE IV
Average number of *Bathua* in fixed quadrat of $2' \times 2'$

Treatments		Before spraying (x)	After spraying (y)	P. C. reduction or increase	Before spraying (x)	After spraying (y)	P. C. reduction or increase
1. Fernoxone	$\frac{3}{4}$ lb.	10.75	7.75	— 27.9	6.50	11.75	+ 80.0
2. "	$1\frac{1}{2}$ lb.	17.25	6.50	— 62.3	7.25	10.75	+ 48.3
3. Chloroxone	$\frac{3}{4}$ lb.	24.25	18.00	— 25.7	9.00	11.25	+ 25.0
4. "	$1\frac{1}{2}$ lb.	45.50	9.75	— 78.5	10.25	15.25	+ 47.8
5. Spontox	$\frac{3}{4}$ lb.	22.25	8.00	— 64.4	9.75	9.25	— 5.12
6. "	$\frac{1}{2}$ lb.	5.75	3.50	— 39.1	10.15	13.00	+ 20.9
7. Tropotox	$\frac{3}{4}$ lb.	21.25	15.50	— 27.1	6.50	15.50	+ 138.5
8. "	$1\frac{1}{2}$ lb.	24.75	11.25	— 54.5	6.50	16.50	+ 138.5
9. Control		14.0	9.50	— 30.1	10.50	38.50	+ 266.6
S. Em.		± 3.27			± 4.13		
C. D.		9.52			12.03		

The population count of *Bathua* has also decreased after one month of spraying in the first year and in the second year it has also increased like that of *Motha*. But the percentage increase in the weedicide treatments are lesser than the control.

The population of *Bathua* after one month of spraying has been adjusted as in *Motha*. The test of significance of adjusted values are given below :—

TABLE V
Test of significance of treatments means.

Source	1957—'58				1958—'59		
	D. F.	S. S.	M. S.	Ratio	S. S.	M. S.	Ratio
Treatment + error	31	1216.6			3691.96		
Error	23	766.5	33.33		1366.1	59.40	
Treatment	8	450.1	56.24	1.68	2325.81	290.73	4.89

Test shows that the differences are highly significant in the year 1958—59.

The adjusted population are presented in Table VI.

TABLE VI
Adjusted number of *Bathua* after one month of spraying

Treatments		1957-'58	1958-'59
1. Fernoxone	$\frac{3}{4}$ lb.	9.40	13.23
2. "	$1\frac{1}{2}$ lb.	6.84	11.69
3. Chloroxone	$\frac{3}{4}$ lb.	17.44	10.93
4. "	$1\frac{1}{2}$ lb.	13.20	14.04
5. Spontox	$\frac{3}{4}$ lb.	7.76	8.40
6. "	$1\frac{1}{2}$ lb.	5.97	11.43
7. Tropotox	$\frac{3}{4}$ lb.	15.43	17.98
8. "	$1\frac{1}{2}$ lb.	10.60	11.43
9. Control		10.62	37.11
S. Em.		12.37	± 3.91
C. D.		N. S.	11.44

No significant difference is observed in the first year and in second year all the weedicides treatments have reduced the number from control, but the different weedicides treatments do not differ significantly.

B. Effect on the yield of wheat grain: The yield of wheat grain obtained in the two years are presented below. Significant difference has been observed in the year 1957-'58 whereas the results for the 1958-'59 are not significant.

TABLE VII
Yield of grain in mds. per acre

Treatment	1957-'58		1958-'59		
	Yield	Mean yield	Yield	Mean yield	Mean yield for two years
1. Fernoxone $\frac{3}{4}$ lb.	12.80	12.69	14.18	14.95	13.42
2. " $1\frac{1}{2}$ lb.	12.59		15.72		
3. Chloroxone $\frac{3}{4}$ lb.	14.03	13.77	18.59	17.16	14.68
4. " $1\frac{1}{2}$ lb.	13.51		15.72		
5. Spontox $\frac{3}{4}$ lb.	13.73	14.81	14.34	14.61	14.75
6. " $1\frac{1}{2}$ lb.	16.05		14.87		
7. Tropotox $\frac{3}{4}$ lb.	12.59	13.10	17.36	16.69	14.85
8. " $1\frac{1}{2}$ lb.	13.62		16.01		
Average of 1-8 (weedicides)		13.61		15.85	14.73
9. Hand weeding		12.38		17.90	14.64
Average effect of weedicides and hand weeding		13.48		16.79	14.78
10. Control		11.46		13.90	12.68
C. D.		1.89		n. s.	

The only significant difference has been observed between control and the average effect of rest weeding treatments in the year 1957-'58. The other comparisons are not significant.

Discussion: The weedicides tried are of different active ingredients which react differently with different weeds. Fernoxone and Chloroxone contains sodium salt of 2, 4-D whereas spontox contains a mixture of 2, 4-D and 2, 4, 5-T and Tropotox contains M. C. P. B. *Motha* has been controlled significantly in both the years by all the weedicides excepting, Tropotox in the year 1957-'58 (Table III). Similarly all the weedicides have controlled *Bathua* significantly in the year 1953-'59, whereas no significant difference has been observed in the year 1957-'58 (Table V).

The differences in wheat due to various weedicides differ appreciably in both the years, but the differences are not significant in one out of two years. In the year 1957-'58 the average effect due to weedicides and one weeding has significantly given higher yield than the control. In the year 1958-'59, none of the comparisons is significant. Pande (1954) has also found increased yield of grain by the application of 2, 4-D as salt at the tillering phase of the crop. Verma (1958) has also reported the increased yield over unweeded control by the application 2, 4-D. Similarly increased yield over control has also been observed in both the years in the present experiment.

Summary: Experiments on weed control conducted in 1957-'58 and 1958-'59 by common weedicides have been reported. The common weedicides used were Fernoxone, Chloroxone, Spontox and Tropotox at two doses, $\frac{3}{4}$ lb. and $1\frac{1}{2}$ lb. of acid equivalent per acre. Two checks of one weeding by hand and an unweeded control were kept.

Increased yield of wheat grain has been observed in all the treatments over unweeded control. Average effect of weedicides and one hand weeding has given statistically significant higher yield over control in one year. The rest of the comparisons are non-significant.

All the weedicides have controlled *Motha* significantly in both the years except Tropotox in 1957-'58. *Bathua* has also been controlled significantly in the year 1958-'59.

Acknowledgment: Greatful thanks are due to Sri A. K. Ghosh, Senior Statistical Assistant for his kind help in the statistical analysis of data.

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Combination of Results of Groups of Similar Experiments

by

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Introduction: The repetition of agricultural experiments in a number of places and/or over a number of seasons has become a common feature now. The varietal response to manuring experiment in paddy, the model agronomic experiments sponsored by the Indian Agricultural Research Institute on a number of crops and simple fertiliser experiments on cultivators' fields are instances. The object of such repetitions is to study the average response to treatments over a number of places or over a number of seasons and to make firm recommendations that hold good for a fairly wide tract or to a variety of seasonal conditions. It may also be desired to test the consistency of the responses from place to place or from season to season. A knowledge of the method of combining the results of the several repeated experiments, therefore becomes necessary. This article is intended to draw attention to a few of the salient statistical considerations involved in the procedure and to briefly indicate the steps to be adopted for a preliminary and overall appraisal of the results.

Material and Methods: The numerical data used here to illustrate the procedure relate to the yields of six bunch groundnut strains in a comparative trial to determine the best among them, carried out on the Central Farm, Coimbatore during the monsoon season of three years 1953, 1954 and 1955. The data are presented Table I.

The first step is to carry out an analysis of variance for the data of each season separately. The results of the three analyses are presented in Table II. A combined preliminary analysis is next computed after tabulating the data in a two way table as presented in Table III. The results of this analysis are furnished in Table IV.

The procedure outlined above is relatively simple and may be employed as a preliminary step to indicate the over all trend of results. But, it is open to the objection that the test of significance employed in the pooled analysis is not fully efficient and consequently the conclusions arising therefrom are not quite valid, owing to the heterogeneity of the error and the varieties x seasons interaction variances in the different experiment. This leads to the consideration of the steps involved in the procedure in four different situations arising from the combination of (i) the homogeneity of the error variances and (ii) the presence or absence of the varieties x seasons interaction.

Let us first consider the procedure for testing the homogeneity of error variances. This is done by what is called the Bartlett's 'M' test. This is a simple chi-square (X^2) test and is carried out as follows:

$X^2 = X'^2/C$, where C is a correction.

$$X'^2 = \log_e 10 \left[\frac{n}{(n-1)} \left(\frac{\sum_i K_i}{\sum_i K_i} \right) \log 10 \frac{\sum_i S_i^2}{S^2} - \frac{n}{\sum_i K_i} \left(K_i \log 10 \frac{S_i^2}{S^2} \right) \right]$$

Where n = no. of experiments; K_i and S_i^2 are the degrees of freedom and variance for error in the i th experiment; $\sum_i^n$ = summation over all

experiments and $\frac{\sum_i^n K_i S_i^2}{\sum_i^n K_i} =$ pooled error variance. If the

error degrees of freedom are all equal, a simple average of the individual error variances would give the pooled error variance. The

correction C for X'^2 is given by: $C = 1 + \frac{1}{3(n-1)} \left(\frac{\sum_i^n 1}{\sum_i^n K_i} - \frac{1}{\sum_i^n K_i} \right)$

the symbols having the same meaning as above. Testing the homogeneity of the 3 error variances in Table II, we get,

$$\frac{-2}{S} = \frac{565 + 4861 + 42340}{3} = 15922$$

$$X^2_{12} = 2.30259 \{ (75 \times 4.20201) - 276.63825 \} \\ = 88.678$$

$$C = 1 + \frac{1}{3 \times 2} \left(\frac{3}{25} - \frac{1}{75} \right) = 229.225$$

$$X^2_{12} = 88.678 / C = 87.130$$

This is a highly significant value of X^2 and shows that the error variances are not homogeneous. The next step in such a situation will be considered subsequently.

Assuming for the present that the error variances are homogeneous (indicated by a non-significant value of X^2), then the pooled analysis presented in Table IV is valid. The error variances of the three experiments are pooled together to get a pooled estimate of error for testing the significance of the varieties x seasons interaction. If the test is non-significant, we may assume that interaction is non-existent. In such a case, the interaction and error variance are pooled together to get a more precise estimate of the error for testing the varieties mean square. The appropriate conclusions regarding the overall performance of varieties may then be drawn depending on the significance or otherwise of this test.

If, however, the interaction is significant or if it cannot otherwise be assumed to be absent even when the test is non-significant, the appropriate mean square will be that of the varieties x seasons interaction. The overall conclusions about the varieties are drawn based on the result of this test. The test for season may be similarly carried out but is generally of no importance.

A different situation has to be confronted when the errors in the different experiments are not homogeneous, as has happened in our example. Here the error variances cannot be pooled to obtain a joint estimate, as such pooling runs counter to the basic assumptions underlying the analysis. The presence or absence of varieties x seasons interaction, on which depends the test for the overall varietal differences, has to be tested by carrying out what is called a weighted analysis of variance.

For this analysis, the means of treatments (varieties) for each season are tabulated in a two-way table as in Table V. A weight W is then computed for each experiment from the formula.

$W_i = r_i / s_i^2$, where r_i and s_i^2 are the number of replications and the error variance respectively of the i th experiment. The sum of squares are next computed weighting them with the appropriate weights.

From the table, the sums of squares (S. S.) are calculated as follows:—

Correction factor (C. F.)	= G^2 / tW , where t = number of treatments (varieties)
	= 51818.16
Total S. S.	= $\sum w_i S_i - C. F.$ = 5164.71
Treatments S. S. (varieties)	= $\sum T_i^2 / W - C. F.$ = 1283.73
Seasons S. S.	= $\sum w_i Y_i^2 / t - C. F.$ = 3779.23
Interaction S. S.	= Total S. S. - (Treatments S. S. + Seasons S. S.) = 101.75

For testing the presence of the interaction, the interaction has to be transformed into a X^2 by the formula:

$$X^2 = \frac{(K-4)(K-2) \times I}{K(E+t-3)} \quad \text{with } \frac{(n-1)(t-1)(K-4)}{(K+t-3)}$$

degrees of freedom, where, K = degrees of freedom for error; I = Interaction S. S., n = number of experiments; and t = number of treatments.

Substituting values from our example, we get,

$$X^2 = \frac{(25-4)(25-2) \times 101.75}{25(25+6-3)} \quad \text{with } \frac{(3-1)(6-1)(25-4)}{(25+6-3)}$$

degrees of freedom.

$$= 70.207 \text{ with } 7.5 \text{ degrees of freedom.}$$

This is a highly significant value of X^2 indicating the significance of the varieties x seasons interaction. Next, in the pooled analysis presented in Table IV, the varieties mean square is tested against the interaction mean square. The test is found to be significant in regard to the overall differences among the varieties. The results and conclusions are presented in Table VI.

If the value of X^2 is non-significant, indicating the absence of the varieties x seasons interaction, then no general test of significance appears to be available for testing the overall varietal differences. An approximate method would be to test the varieties mean square against the interaction mean square in the weighted analysis of variance, and the conclusions drawn based on this test.

There are many more situations likely to arise in the combination of results of a series of experiments, such as heterogeneity among different components of interaction corresponding to groups of treatments, the need for making comparisons of single degrees of freedom, the adoption of different designs for the experiments, the repetition of experiments in both space and time etc. These are much more complicated than what has been presented here and an elucidation of the appropriate procedures in such instances has, therefore, not been attempted. It may also be stated that satisfactory and fully efficient methods for meeting many of these situations are not, as yet, available.

Acknowledgment: The author's thanks are due to Sri C. R. Seshadri, B. A., B. Sc. (Ag.), then Oilseeds Specialist and now Joint Director of Agriculture, Madras, under whose guidance the experiments were carried out. His thanks are also due to Sri M. Bhavani-shanker Rao, B. Sc. (Ag.), Oilseeds Specialist and Secretary, Research Council, Coimbatore who was the stimulus behind the writing up and presentation of this article and who was kind enough to go through the manuscript and make a number of valuable suggestions.

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COLLEGE DAY AND CONFERENCE, 1960

The College Day & Conference will be celebrated from 19th to 22nd August, 1960.

The General Body Meeting of the M. A. S. U. will be held on 21—8—1960.

APPENDIX.

TABLE I.

Groundnut - Yield of dry picked pods in gm. per plot.

Year	Repli- cations	VARIETIES					
		TMV. 2	A. H. 4111	A. H. 4218	A. H. 4515	A. H. 6279	A. H. 6481
1953	I	550	745	875	720	900	570
	II	905	935	950	825	960	675
	III	940	875	1125	900	1020	630
	IV	875	945	1175	985	1255	745
	V	905	900	1245	885	1000	695
	VI	825	930	1070	825	1245	620
Total		5000	5330	6440	5140	6380	3935
1954	I	420	400	300	350	180	120
	II	340	350	225	260	340	100
	III	370	250	240	210	400	60
	IV	440	290	440	280	410	200
	V	395	300	420	380	430	220
	VI	375	300	450	190	240	150
Total		2340	1890	2075	1670	2000	850
1955	I	2344	2697	2571	2179	2219	1730
	II	2458	2731	2537	2139	2424	1821
	III	1718	2083	2003	2127	2093	1730
	IV	2151	2202	1821	2480	2105	1514
	V	2503	2663	2242	2242	1923	1707
	VI	2299	2424	1991	1764	1945	1878
Total		13473	14800	13165	12931	12709	10380

TABLE II.

Analyses of Variance.

Year	Source of Variation	Degrees of freedom	Sum of squares	Mean Squares	'F'
1953	Replications	5	251604	50321	260.50**
	Varieties	5	735938	147188	
	Error	25	14133	555	
	Total	35	...	...	

TABLE II. (Contd.)

Year	Source of Variation	Degrees of freedom	Sum of squares	Mean Squares	'F'
1954	Replications	5	50596	10119	9.15**
	Varieties	5	222437	44487	
	Error	25	121525	4861	
	Total	35	...	...	
1955	Replications	5	729798	145960	8.18**
	Varieties	5	2732640	336528	
	Error	25	1058503	42340	
	Total	35	...	...	

TABLE III.
Varieties X Seasons.

Varieties	SEASONS		
	1953	1954	1955
TMV. 2	5000	2340	13473
A. H. 4111	5330	1890	14800
A. H. 4218	6440	2075	13165
A. H. 4515	5140	1670	12931
A. H. 6279	6380	2000	12709
A. H. 6481	3935	850	10380

TABLE IV.
Pooled Analysis of Variance.

Source of Variation	Degrees of freedom	Sum of Squares	Mean Square	'F'
Seasons	2	64295749.8	32147874.9	3.948*
Varieties	5	1786165.9	357233.2	
Interaction: Varieties x seasons	10	904846.9	90484.7	

TABLE V.
Weighted analysis - Mean yield per plot.

Varieties	SEASONS			$T_j = \sum_i w_i x_{ij}$
	1953	1954	1955	
TMV.	833	390	2246	9.6406
A. H. 4111	888	315	2467	10.1634
A. H. 4218	1073	346	2194	12.1280
A. H. 4515	857	278	2155	9.7450
A. H. 6279	1063	333	2118	11.9952
A. H. 6481	656	142	1730	7.3836
$Y_i = \sum_j x_{ij}$	5370	1804	12910	$W = \sum_i w_i$ = 0.01199
$w_i = r/s_i^2$	0.01062	0.00123	0.00014	
$\sum_i w_i Y_i =$	$>$			$= G = \sum_j T_j = 61.0557$
$S_i = \sum_j x_{ij}^2$	4926516	579378	28067090	
$w_i S_i$	52340.84	712.63	$\sum_i w_i S_i$	= 56982.87

TABLE VI.
Summary of results from the Pooled analysis at Table IV.

Variety	Mean acre yield in lb.	Standard Error	Critical Difference (P = 0.05)
TMV. 2	672.8	41.27	130.02
A. H. 4111	711.8		
A. H. 4218	700.8		
A. H. 4515	638.5		
A. H. 6279	682.1		
A. H. 6481	490.6		

Conclusion :

A. H. 4111, A. H. 4218, A. H. 6279, TMV. 2, A. H. 4515, A. H. 6481.

Some occasional pests of Jasmine

by

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During the last three years various insects occurring on Jasmine were studied for their importance and type of damage and their characteristic features reported in an earlier paper. (David 1958). Further observations showed that there were several other insects which were capable of infesting the crop occasionally and causing rather insignificant injury. Since these insects might flare up into prominence during certain epidemics and the record of these would serve to throw light on the host range of the insects concerned, an account of the insects is given in this paper. It may be mentioned here that excepting the leaf-miner and the horn worm, other insects are being noted on this crop for the first time.

The brown stink bug: (*Tolumnia* sp.?)

This is a pale brownish bug with variegated markings on the dorsum and a dark brown cuneus. It attains a length of about 20 mm and has the base of the 5th and 6th antennal segments white. It lays white, spherical eggs with circular lids in groups of about 30 on the upper surface of the leaves. The nymph is black except for the base of the femur, middle of tibia, base of 5th antennal segment and spots on the dorsum which are white. There is a spine in front of the eye and four others on the margin of the thorax. It feeds singly in the open portion of the tender stems and makes the twig droop and wilt away in course of time. Very few nymphs develop to full stature and adults are not usually seen on the plants. It attacks all varieties intermittently throughout the year.

This insect has to be reckoned as a potential pest of the crop as it is capable of inflicting severe damage. But it has not so far been able to build up a heavy density of population. It has been noted in small numbers on other plants like *Bauhinia racemosa*, *Glyricidia sepium*, *Lantana* sp., *Mimusops hexandra* and *Triphasia aurantiola* (Chinese lemon).

The green leaf hopper: (*Putala* sp.?)

A green, elongate Fulgorid bug with a long snout and hyaline wings was noted on the tender leaves of *Jasminum flexile* during July and August. It rests in the midrib portion singly on the upper surface and is not easily detected because of its cryptic colouration. It jumps out quickly when approached. There were only few adults and nymphs and there was no marked injury by its feeding.

The green scale: (*Lepidosaphes* sp.)

Small colonies of an elongate, green scale insect was noted on the leaves of *Jasminum sambac* in the lower portions in April and May. The affected leaves were drying away from the tips and curling backwards. The infestation was a mild one limited to a few plants and the affected leaves were removed. The insect should be capable of causing severe damage if it occurs on a large scale.

The Gingly horn worm: (*Acherontia styx* W.)

The white spherical eggs of the Sphingid was noted in fairly large numbers on *J. sambac* and *J. flexile* in summer from February to April and in the monsoon period from October to December. However very few caterpillars were found to attain full development possibly due to the depletion of their numbers by predators. In captivity they were able to reach full maturity and emerge as adults. Complete defoliation was noted in the portions where the caterpillars were feeding. Evidently the insect is capable of causing some damage to the plant occasionally.

The Leaf-miner: (*Phyllocnistis* sp.)

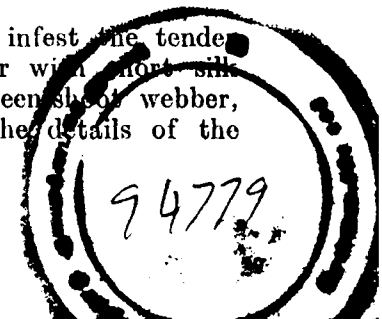
Some of tender leaves in new shoots are occasionally mined in an irregular fashion by a yellow caterpillar which feeds between the epidermal layers. Usually one or, in rare cases, more caterpillars are found in a leaf but the adjacent two or three leaves get affected simultaneously. The leaves curl inwards and dry away along the burrowed portions. The caterpillar comes to the edge of the leaf for pupation in a backward fold of the leaf. The moth is a minute white one which attacks all varieties and in all seasons. The injury has so far not been severe.

The Leaf-roller: (*Eucosma* sp.)

This insect rolls a portion of a tender leaf backwards conically and seals it on all sides by drawing a lid over the basal portion. A single yellow caterpillar remains inside the rolled leaf and feeds on the parenchyma. It pupates in a brownish cocoon of silk in a constriction of the leaf within the roll. When the adult emerges the pupal case projects from the leaf roll through a hole. The moth is dark brown, narrow with long antennae, white legs and a fringe of yellow and black hairs on the middle of the tibiae. It appears intermittently in all seasons and in all varieties. There is, however, very little injury to the plant as even the leaf rolls do not dry away.

Shoot Webbers:

Three species of caterpillars were found to infest the tender shoots of the plants and bind the leaves together with short silk attachments. The attack resembles that of the green shoot webber, *Margaronia unionalis* H. in its early stages. The details of the insects are given below.



(a) The black and grey caterpillar: (*Psorosticha* sp.): This is a dark geyish-green caterpillar, about 10 mm in length with short white hairs on yellowish tubercles, brown head, black prothorax, legs and last abdominal segment. The pupa is brown with the posterior end tapering and the eyes black. The abdominal segments are marked with brown and yellow transverse stripes. The moth is dark brown with the forewings black with lateral white areas in the anterior half and white with black and white edge in the posterior half. The insect attacked *J. auriculatum* mainly but appeared on the others also to a small extent. It occurred in 1956 monsoon period from July to December in large numbers and affected about 50% of the shoots. But since then it has not been seen. It is evidently a sporadic pest.

(b) Brown and yellow caterpillar: (*Micraglossa* sp.): The caterpillar in this case is yellow with short hairs. The head and prothorax are pale with a dark thin line on the posterior border. It pupates in the edge of a leaf folded over on the back. The moth has brown head, a tuft of hairs on the thorax, brown and black forewing with an yellow oblique streak in the middle. The antennae have yellow and black markings. The insect is met with occasionally all through the year on all species but occurs usually in small numbers to be of any economic significance.

(c) Brown, black and green caterpillar: (*Homona* sp.): This caterpillar is longer than the other two, yellowish green with pale, short hairs. The head is pale brown with a dark posterior border line and the prothorax green in the intersegmental portion with a black elliptical plate in the middle. The moth is brown with a small black curved patch in the notch in the anterior portion of the forewing. This insect occurs only on rare occasions but has been noted on all species in various seasons.

Bagworms:

A bagworm was noted producing young ones in the monsoon from June onwards and attacking the leaves of *J. sambac* and *J. flexile*. The cases were made of twigs arranged in a squarish pattern over their bodies. They ate away small holes in the leaves which dried out along the edges. The injury was not significant.

Acknowledgment: The writer gratefully acknowledges the help of Sri T. S. Muthukrishnan in identifying the scale insect. His thanks are due to Sri P. S. Narayanaswamy, Government Entomologist, for the facilities given for the work.

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Research Notes

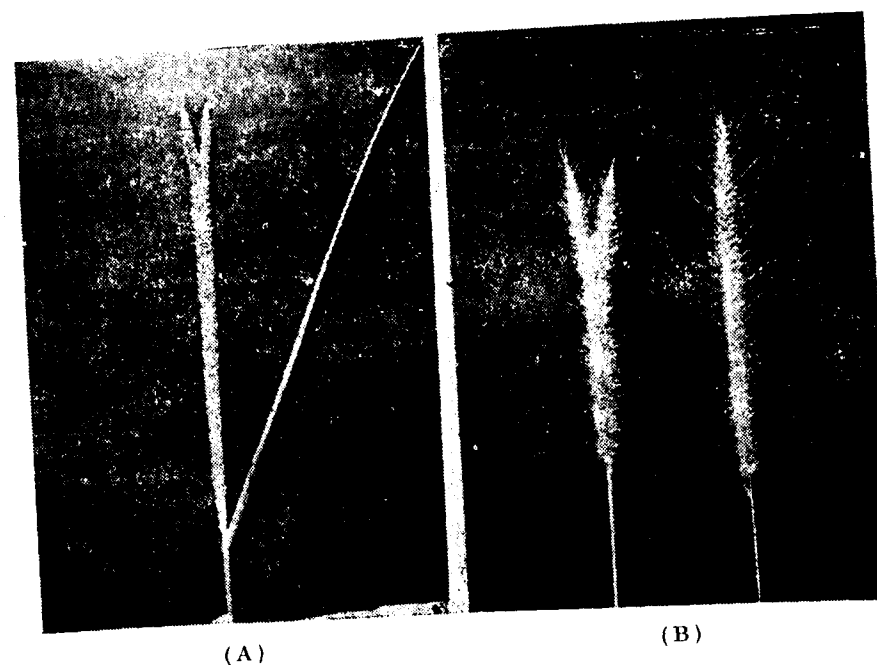
Forked Panicles in Some Grasses

The occurrence of forked panicles in *Setaria holstii* Herrm. (Plate I A) *Cenchrus glaucus* Mudaliar and Daniel (Plate II) and *Pennisetum polystachyon* Schult (Plate B) were noted by the authors during the period between 1957 and 1959. The panicles of these species are normally cylindrical and tapering only at the apex.

Of the causes for the occurrence of branched ears, the views of different people vary considerably, but the phenomenon is mostly attributed to external influences.

Bose (1935) in his study on branched ears of Barley states that the mode of inheritance of branched ear is characteristic of a large class of characters which seem so delicately balanced as to require some special conditions in ontogeny for complete expression and that internal developmental factors, quite aside from the external influences, play a large part in the expression of structural characters.

PLATE I



Krishnaswamy *et al* (1942) have stated that forking of panicles in Millets as *Eleusine coracana* Gaertn. and *Pennisetum typhoides* Stapf & Hubbard. to be a common phenomenon observed in normal populations occurring in stray plants.

Sharman (1944) has studied the branched heads in wheat and wheat hybrids and has indicated that the branched headed factor can be made to behave as dominant or recessive at will.

PLATE II



Chinoy and Nanda (1946) stated that such abnormalities are generally said to appear as a result of changes in environmental conditions especially photo-periodic induction of developmental abnormalities in Indian wheat.

Chandrasekharan *et al* (1950) have recorded the occurrence of branched ears in *Pennisetum typhoides* Stapf and Hubbard, under normal field condition and that branching was not found in any one of the hundred and odd progenies raised from the seeds collected from the forked panicles.

Forked panicles in *Setaria holstii* Herrm. *Cenchrus glaucus* Mudaliar and Daniel and *Pennisetum polystachyon* Schult. were observed in normal field conditions. The plants raised from the seeds of such abnormal panicles in all the three cases did not produce even a single forked panicle. This is in confirmation with the findings of Chandrasekharan *et al* in 1950.

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GIRIJA BALASUBRAMANIAM
and M. NAGARAJAN.

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2. Chandrasekharan, S. N. *et al* 1950 Curr. Sci. **19**. 92-93.
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Extra-axillary Digitate Spike in *Eleusine coracana* Gaertn.

Eleusine coracana (Gaertn, Ragi) comes under the small grained cereals belonging to the group of cultivated crops called millets. On account of the finger like branching of the panicle, it is called the finger millet. Abnormal axillary growth of the digitate spike was spotted out in a bulk population of Ragi strain Co. 6 (white grained Ragi) grown during the main season 1959 at the Millet Breeding Station, Coimbatore.

Normally the panicle of Ragi, consists of a long peduncle and from the free end of it, 4 to 6 spikes radiate in a whorl. The spikes are called fingers and the odd one a little lower down very often attached to one end of the flattened peduncle, is known as a thumb. The spikes are straight or curved inwards. In each finger or spike there are a number of spikelets (60 to 80) which are arranged in two rows, alternately attached to one side of a flattened rachis. (Figs. 1 & 2).



Fig. 1 Fig. 2 Fig. 3 Fig. 4

The abnormal panicle (Fig. 3) consists of a long peduncle and at the free end of it, 4 to 6 spikes radiate in a whorl. The thumb is absent in the main peduncle and instead, in the axil of the flag leaf, there arises a digitate spike which bears normal fertile spikelets. In another abnormal panicle (Fig. 4) as in the previous case, the axillary digitate spike arises from the axil of the flag leaf. The thumb is, however, present and normal fertile spikelets are borne. The seeds from the normal spikes and from the extra axillary digitate spike were collected and shown in pots separately. Both the seeds gave normal panicked Ragi plants true to the type of Ragi Co. 6. strain.

No reasonable explanation can be given for this abnormal growth of the extra digitate spike in the panicle of Ragi. This may be considered as a case of freakish development in this millet.

Agricultural College &
Research Institute,
Coimbatore - 3

L. SIVAGNANAM.

College and Estate News

Dr. Beattie D' Souza G. M. V. C., B. V. Sc., Principal, Madras Veterinary College addressed the students on 15-7-60 and gave his impressions about the United States of America.

The final year Post-Graduate students completed their final examinations in the first fortnight of July.

Orientation day was celebrated with ecstasy on 27-7-60. The students were allotted to the 30 tutors, with 18-20 students under each tutor to ensure closer and intimate relationship between the wards and the tutor. Starting with breakfast, the students were taken round the different sections. Dr. S. Krishnamurthi, B. Sc., (Ag.), M. Sc., Ph. D. (Mich.) Dean and Additional Director of Agriculture, addressed the students in the evening. There was a variety entertainment by the freshmen and the College Orchestra was in attendance.

The following matches played by our teams and the results are given below.

Hockey	Agri.	Vs	P. S. G. College of Technology-Lost (1-3)
	"	"	Government Polytechnic-Won (9-Nil)
	"	"	P. S. G. Arts College-Won (1-0)
Foot-ball	Agri.	Vs	P. S. G. Arts College-Won (8-1)
	"	"	P. S. G. College of Technology-Lost (1-0)
	"	"	Government Polytechnic-Won (4-0)
Basket-ball	Agri.	Vs	P. S. G. College of Technology-Lost
Volley-ball	Agri.	Vs	P. S. G. College of Technology-Won
	"	"	Coimbatore Institute of Technology-Won
Cricket	Agri.	Vs	P. S. G. College of Technology-Drawn
	"	"	P. S. G. Arts College-Won

Dr. A. Mariakulandai, Ph. D., left for Madison, U. S. A., to attend the International Soil Science Congress.

Dr. Rosenberg, Dean of the Imperial College of Agriculture, Hawaii addressed the members of the study group on 29-7-60.

MADRAS AGRICULTURAL STUDENTS' UNION—ELECTIONS

Consequent on the withdrawal of M/s. T. Nataraj and G. Thulasidas from the contest for the election of office-bearers, the following is the final list of valid nominations:

Vice-President:	1. Dr. A. Mariakulandai
	2. Mr. A. H. Subramania Sharma
	3. Dr. K. Ramakrishnan
Editor	: Dr. S. Kanakaraj David
Secretary	: Mr. M. Bagavan Dass

The last date for receipt of postal votes is 15-8-1960.

Weather Review — for June, 1960.

RAINFALL DATA (IN INCHES)

Region	Station	Total rainfall for the month	Departure from normal	Total since 1st January
North	Madras (Meenambakkam) ...	4.0	+ 2.1	5.4
	Tirukkuppam* ...	2.2	£	3.8
	Vellore ...	4.0	+ 2.2	4.4
	Gudiyatham* ...	4.1	+ 1.0	5.1
East Coast	Palur* ...	2.0	— 2.3	2.6
	Tindivanam* ...	2.5	+ 0.1	3.4
	Cuddalore ...	4.0	+ 2.6	5.0
	Nagapattinam ...	3.6	+ 2.4	8.3
	Aduthurai* ...	2.4	+ 1.2	3.4
	Pattukkottai* ...	0.2	— 1.2	11.8
Central	Salem ...	1.2	— 1.9	8.2
	Coimbatore (A. M. O.)* ...	0.2	— 1.8	11.0
	Coimbatore ...	...	— 1.5	4.6
	Tiruchirapalli ...	...	— 1.8	5.8
South	Madurai ...	0.8	— 1.5	5.8
	Pamban ...	...	— 0.2	7.9
	Koilkatti* ...	...	— 0.6	11.3
	Palayamcottai ...	...	— 0.4	12.7
	Ambasamudram* ...	...	...	15.8
	Nagerecoil* ...	4.0	— 3.8	24.4
Hills	Capecomorin* ...	0.9	— 1.9	22.5
	Kodaikanal ...	3.6	— 0.6	29.0
	Coonoor* ...	3.0	— 1.0	34.7
	Ootacamund* ...	5.7	+ 0.1	14.4
	Nanjanad* ...	3.2	— 5.7	13.7

- * Meteorological Stations of the Madras Agricultural Department.
- £ Actual value 0.02".

The month began with a dry weather. Till 4-6-1960 scattered showers alternated with dry weather. On 5-6-1960 scattered showers were received in Madras State. The weather became dry again on 6-6-1960. Thereafter for three days scattered showers were received in Madras State. The weather became dry again on 10-6-1960. Isolated scattered showers were received on 11-6-1960 and 12-6-1960. In the subsequent two days the weather was mainly dry. On 15-6-1960 scattered showers were received in Madras State. Rain or thunder-showers were fairly widespread on 16-6-1960. In the subsequent four days scattered showers were received in Madras State. Then again the weather became dry on 21-6-1960. From 22-6-1960 scattered showers were received for three days. On 25-6-1960 the weather became dry once again. There after for two days scattered showers were received. Then again the weather became dry on 26-6-1960 and remaining so on the next day as well. The month ended with scattered showers in Madras State.

2. In the first eight days in the month of June, 1960 day temperatures were practically above normal throughout the State. In the subsequent two days they were below normal, though certain rise in day temperatures was noticed outside

the Madras State on 10-6-1960. On 11-6-1960 they were again above normal throughout the state and remained so till 16-6-1960. Madras Meenambakkam recorded the highest temperature of 41.0 on 15-6-1960. They fell appreciably below normal on 17-6-60 in South Madras State. Thereafter upto 26-6-60 there were no large changes in day temperature, but Cuddalore recorded the highest temperature of 39°C on 22-6-1960. On 27-6-1960 day temperatures were appreciably below normal in North Madras State. Thereafter for three days they were generally above normal throughout the State. Nagapattinam recorded the highest temperature of 39°C on 29-6-1960.

4. The noteworthy rainfalls and zonal rainfall for the month of June, 1960 are furnished hereunder:—

Noteworthy rainfalls.

S. No.	Date	Name of Place	Rainfall in inches
1.	11-6-1960	Ootacamund	1.8"
2.	16-6-1960	Meenambakkam	1.6"
3.	16-6-1960	Kodaikanal	1.6"
4.	21-6-1960	Pattukkottai	1.6"
5.	30-6-1960	Nagarcovil	4.0"

Zonal rainfall (in inches)

Name of the Zone	Rainfall for June, 1960	Departure from normal	Remarks
North	3.6"	+ 1.3	Above normal
East Coast	2.5"	+ 0.5	do.
Central	0.4"	- 1.7	Far below normal
South	0.8"	- 1.2	do.
Hills	3.9"	- 1.8	do.

Agricultural Meteorology Section,
Lawley Road Post, Coimbatore-3.
18th July, 1960.

C. B. M., & K. P. N.

Departmental Notifications

Gazetted Officers—Madras Agricultural Department Postings and Transfers during the month of July, 1960

Name and Designation	Posted or Transferred to
Sri S. Varisai Muhammad, Post-Graduate Student	Assistant Oil Seeds Specialist, Pollachi
„ V. Subbiah, Asst. Oil Seeds Specialist, Pollachi	Assistant Oil Seeds Specialist, Koilpatti
„ S. Arunachalam, Agronomy Assistant, Aduthurai	Assistant Agronomist, Coimbatore
„ M. S. Sethuraman, Asst. in Agronomy, Coimbatore	Assistant Agronomist, Coimbatore
„ P. V. Marappan, Post-Graduate Student	Assistant Cotton Specialist, Srivilliputhur
„ Iyemperumal, Assistant Cotton Specialist, Srivilliputhur	Gazetted Assistant to the Certification Officer, Rajapalayam
Dr. B. W. X. Ponnaiah, Professor of Plant Genetics	Associate Dean, Agricultural College & Research Institute, Coimbatore
Dr. A. Mariakulandai, Associate Dean	Professor of Agronomy
Sri S. Muthusami, Assistant Extension Specialist, Coimbatore	Extension of Earned leave for 48 days from 5-6-1960
„ N. Ranganathachari, Asst. Extension Specialist	Additional Charge of the Assistant Extension Specialist
„ C. D. Chockalingam, Block Development Officer	District Agricultural Officer, Mayuram
„ K. Kuppmuthu, Assistant Extension Specialist	Field manure Officer, Madras
„ N. M. Thyagarajan, Asst. Agricultural Chemist, Coimbatore	Additional Lecturer in Chemistry, Coimbatore & Addl. Charge of Asst. Agricultural Chemist
„ P. S. Narayanaswami, Assistant Entomologist (on leave)	Government Entomologist & Assoc. Professor of Entomology
„ A. K. Nagaratnam, Asst. in Millets & Pulses, Coimbatore	Superintendent, Agricultural Research Station, Koilpatti
„ A. R. Viswanathan, Asst. in Oilseeds	Coconut Development Officer, Ramnad District
Srimathi Sunanda Sakharam Rao, Asst. Lecturer in Botany	Assistant Botanist, Ooty
Sri V. Rajagopal, Assistant Lecturer in Economics, Agricultural College & Research Institute	Additional Lecturer in Economics, Agricultural College & Research Institute, Coimbatore

Upper Subordinates—Agricultural Department
Postings and Transfers during the month of July, 1960

Name and Designation	Posted or Transferred to
Sri R. Kumarasami, Fruit Assistant Periakulam	Coconut Nursery Assistant, Sholavandan
„ P. C. Meenashisundaram, Soil Survey Assistant	Assistant in Bacteriology
„ K. Vasudevan Nair, Assistant in Bacteriology	Assistant, under Field manure Officer
„ G. V. Kothandaraman, Soil Survey Assistant	Assistant in Chemistry, Agricultural College & Research Institute
„ D. Sarathi, Assistant in Chemistry	Dairy Manager, Agricultural College & Research Institute
„ G. Thulasidas, Post-Graduate Student	Assistant Lecturer in Botany, Agricultural Research Institute
„ T. K. Ramachandran, State Seeds Farm Manager, Thiruvankulam	Coconut Nursery Assistant, Coimbatore
„ E. Abubucker Siddiq, Assistant in Oil Seeds, Karur	Botany Assistant, Coimbatore
„ M. Moosa Shariff, Paddy Assistant, Coimbatore	Assistant in Plant Physiology
„ N. Swaminathan, Assistant in Oilseeds, Pollachi	State Seed Farm Manager, Thiruvankulam
„ G. S. Thangamuthu, Paddy Assistant	Assistant Lecturer in Agriculture, Coimbatore
„ M. Joseph, Soil Conservation Asst., Panruti	Cane Asst., Sugarcane Research station Kulithalai
„ K. Nanjan, Extension Officer, Kotagiri	Potato Assistant, Nanjanad
„ G. J. Muthu, Millet Assistant, Coimbatore	Asst., Lecturer in Agriculture, Coimbatore
„ T. S. Rajamani, Chemistry Asst., Coimbatore	Chillies Assistant, Koilpatti
„ S. Sankaran, Chillies Assistant, Koilpatti	Millet Assistant, Coimbatore
„ S. Thangavelu, Paddy Assistant, Thiruthuraipoondi	Tobacco Assistant, Bhavanisagar
„ S. P. Mustaffa, State Seed Farm Manager, Veppankulam	Chemistry Assistant, Coimbatore
„ R. Natarajan, Chemistry Assistant, Cuddalore	Soil Conservation Assistant, Panruti
„ S. Krishnaswami, Extension Officer, Sholapuram	Assistant in Cytogenetics, Coimbatore

Name and Designation	Posted or Transferred to
Sri T. G. Ramamurthi, Tobacco Assistant, Bhavanisagar	Oilseeds Assistant, Salem
„ R. Subramania Pillai, Coconut Nursery Assistant, Coimbatore	Paddy Assistant, Coimbatore
„ A. K. Vorghese, Cane Assistant, Sugarcane Research Station, Kulithalai	Assistant in Paddy, Thiruthuraipoondi
„ K. C. Chengappa, Potato Assistant, Nanjanad	Extension Officer, Kothagiri
„ M. Kunhamu Nair, Assistant in Cytogenetics	Chemistry Assistant
„ G. Perumal, Spl. Agricultural Demonstrator, Coimbatore	Farm Manager, Central Farm, Coimbatore
„ K. Navakoti, Assistant, in Oilseeds, Tindivanam	Oilseeds Assistant, Salem
Srimathi Lily Dhanaraj, Assistant in Paddy	Granted Maternity leave for 2 months from 11-5-60
Sri A. Venkata Rao, Post-Graduate Student	Mycology Assistant, Coimbatore
Kumari G. Thangamani Ganapathy, Assistant in Mycology	Ousted from Service
Sri A. N. Sivappa, Post-Graduate Coimbatore	Chemistry Assistant, Coimbatore
„ N. Venkataraman, Cotton Asst., Bhavanisagar	Cotton Assistant, Koilpatti
„ G. Soundrapandian, Extension Officer, Gobi	Paddy Assistant, Coimbatore
„ Stephen Durairaj, Meteorology Assistant, Coimbatore	Botany Assistant, Coimbatore
Kumari M. S. Thangam, Post-Graduate Student	Assistant in Millet, Coimbatore
Sri S. Soundarajan, Extension Officer, Seithanganllur	Fruit Assistant, Kallar
„ M. Natarajan, Cotton Assistant, Coimbatore	Entomology Assistant, Coimbatore
„ G. Bepin Bose, Cotton Assistant, Koilpatti	Chemistry Assistant, Madurai
„ Md. Alikhan, Botany Assistant, Coimbatore	Oilseeds Assistant, Coimbatore
„ V. Palanisami, Fruit Assistant, Kallar	Assistant, Perennial Vegetable Scheme, Coimbatore

Name and Designation	Posted or Transferred to
Sri James Mathew, Agri. Demonstrator, Koradacherri	Resigned
„ S. Venkatesan	Fruit Assistant, Periakulam
„ N. Sadasivam	Assistant Botanical Gardens, Ootacamund
„ K. C. Alexander, Agricultural Demonstrator, Archarakpakam	Mycology Assistant, Coimbatore, Ousting Kumari V. Kamalam
„ P. Narayanaswamy, Extension Officer, Alanganallur	Mycology Assistant, Coimbatore, Ousting Kumari P. N. Kalyani
„ K. S. Subramaniam, Paddy Asst. Coimbatore	Soil Survey Assistant, Parambikulam—(Upper Aliyar Scheme), Coimbatore
„ U. S. Sreeramulu, Chemistry Asst. Coimbatore	Soil Survey Assistant, Parambikulam—(Upper Aliyar Scheme), Coimbatore
„ K. K. Krishnamurthy, Agricultural Demonstrator, Pollachi	Do.
„ E. M. Balakrishnan, Agricultural Demonstrator, Madathukulam Coimbatore District	Soil Survey Assistant (Blue Algae Scheme), Coimbatore
„ G. Y. David Ponniah, Entomology Assistant, Coimbatore	Botany Asst., Coimbatore vice Kumari P. Meenakshi proceed on leave
„ T. N. Krishnamurthy, F. M. Kattupakkam	Paddy Assistant, Paravoor, Thanjavur District
„ S. R. Sreerangaswamy, Assistant Lecturer in Botany, Coimbatore	Paddy Assistant (Seed Dormancy Scheme), Aduthurai
„ D. Poulas, Special Agricultural Demonstrator (Sugarcane), Udumalpet, Coimbatore Dt.	Horticultural Assistant, Kanyakumari (Off season mango scheme)
„ M. S. Karuppuswamy, Chemistry Assistant, Coimbatore	Fruit Assistant, F. R. S., Periakulam
„ R. Ramadurai, Mycology Assistant, Coimbatore	Paddy Assistant, Rice Research Station, Tirur
„ P. Venkatanarayanan, Paddy Asst., Tirur	Extension Officer, Kaveripakkam, North Arcot District
„ N. Palanikumaraswamy, Fruit Assistant, Periakulam	Plant Protection Assistant, Dindigul, Mathurai District

DISTRICTS

SOUTH ARCOT, NORTH ARCOT
COIMBATORE
RAMANATHAPURAM
TIRUNELVELI



CROPS
GROUNDNUT, GINGELLY
COTTON
&
TOBACCO

Review of market conditions of commercial crops in the notified areas of Madras State for the month of June, 1960.

Cotton: In this section Cotton Kapas: Pothis of 280 lbs.
Cotton lint: Candy of 784 lbs.

Coimbatore District: Season: The weather was dry excepting a few drizzles here and there. Harvest of Cambodia Cotton is practically over excepting in Udumalpet taluk where there were stray pickings of second crop kapas.

Arrivals and Transactions: Lint: The market opened with a stock of 9847 candys of Cambodia and 44 candys of Karunganni lint in Tiruppur market area. The total arrivals into Tiruppur during the month of June 1960 (upto 25—6—60) were 9942 candys of Cambodia and 231 candys of Karunganni which included 2648 candys of Cambodia, 217 candys of Karunganni lint locally ginned. Despatches from Tiruppur were 8292 candys of Cambodia and 262 candys of Karunganni lint. On 25—6—60 there was a closing stock of 11,497 candys of Cambodia and 13 candys of Karunganni lint.

Kapas: On 25—5—60 there was a stock of 26,811 pothis of Cambodia and 8003 pothis of Karunganni kapas in Tirupur market area. The total arrivals into Tirupur during the month of June 1960 (upto 25—6—60) were 24,036 pothis of Cambodia and 1980 pothis of Karunganni kapas. The disposals during the month were 32,700 pothis of Cambodia and 4491 pothis of Karunganni kapas. On 25—6—60 there was a closing stock of 18,147 pothis of Cambodia and 5492 pothis of Karunganni Kapas.

Prices: During the month under report the cotton market remained firm with upward trend. Transactions were also done above the ceiling prices subject to survey by the East India Cotton Association, Bombay. Arrivals of kapas from Salem and of new local crop continued in small lots.

Lint: The price ranges of cotton lint and kapas during the month as compared to that of previous month were as hereunder.

	June, 1960	May, 1960
Cambodia superior quality	Rs. 901 to 981	905 to 981
Cambodia average quality	„ 824 to 874	810 to 865
<i>Kapas</i>		
Cambodia superior quality	Rs. 130.75 to 173.00	131.00 to 171.00
Cambodia average quality	„ 100.00 to 130.00	100.00 to 130.00
Karunganni superior quality	„ 127.00 to 142.62	125.00 to 138.37
Karunganni average quality	„ 107.00 to 120.00	110.50 to 122.50

Ramanathapuram District: Season: Except for occasional drizzles there was practically no rain during the month. The second crop of Karunganni is reported to be failure due to lack of rains in the month of June and due to pest attack. Both early and late sown Uganda crop is said to have been affected in growth.

Arrivals and Transactions: Consequent on the failure of 2nd crop Karunganni, market arrivals were poor.

Lint

Name of Markets	Opening Stock	Receipts	Disposals	Closing Stock
1. Virudhunagar	... 190	1200	1200	190
2. Sattur	... 100	1000	1050	50
3. Rajapalayam	... 900	450	400	950
Total	1190	2650	2650	1190

Kapas

1. Virudhunagar	... 2500	11500	12000	2000
2. Sattur		10000	10000	...
3. Rajapalayam		6250	6250	...
Total	2500	27750	28250	2000

Prices:

<i>Lint.</i>	May, 1960	June, 1960
Karunganni best	... Rs. 1000 to 1051	Rs. N. A.
Karunganni	... „ 950 to 1011	„ 950 to 999
Tinny Karunganni	... „ 930 to 946	„ 930 to 965
Karunganni II crop	... „ N. A.	„ 830 to 928
Tinny	... „ 881 to 925	„ 866 to 920
Certified Uganda	... „ 1120 to 1150	„ ...
Uncertified Uganda	... „ 1086	„ 1091

Kapas.

Karunganni	... Rs. 117 to 129	Rs. 112 to 125
Tinny Karunganni	... „ 116 to 125	„ ...
Karunganni II crop	... „ ...	„ 93 to 120
Tinny	... „ 108 to 119	„ 96 to 125
Inferior quality	... „ 75 to 104	„ ...
Uganda I quality	... „ ...	„ 125 to 133
Uganda II quality	... „ ...	„ 116 to 122

Cotton Seeds. (Prices in Rs./nP. per standard maund)

Karunganni	... Rs. 11.74 to 13.06	Rs. 12.07 to 14.68
Tinny	... „ 13.06 to 13.38	„ 13.38 to 14.34
Uganda	... „ ...	„ 12.04 to 12.36

Tirunelveli District: Season: The month was dry and no rainfall was recorded. The dry weather was reported to be good for the second cotton crop. The Kovilpatti market started with an opening balance of 580 candys of Karunganni cotton. The receipts during the month were 640 candys and disposals amounted to 720 candys. The market closed with a balance of 500 candys. Besides about 200 pothis of second cotton crop kapas were also reported.

Price: The price of lint varied from Rs. 1,000/- to 1,060/- per candy. The price of kapas varied from Rs. 98/- to 135/- per pothy and for seeds from Rs. 34/- to 45/- per pothy.

South Arcot District: Season: Rainfall ranging from 1 to 4 inches was received in various places in the district. The rains facilitated the lifting of standing summer groundnut crop.

Arrivals and Transactions: Cotton Kapas: Arrivals and despatches amounted to 749 pothis and 760 pothis respectively. The stock with the trade at the end of the month stood at 80 pothis.

Prices: Average price per pothi of 280 lb. was Rs. 150/- at Panruti and Rs. 124—80 at Villupuram.

II. Groundnut:

South Arcot Market: The harvest of peanut variety crop was concluding while the harvest of spreading variety crop did not commence. Arrivals to the market declined and totaled 5840 tons comprising 5275 tons from the district and 565 tons from other bordering districts. Despatches to other districts amounted to 2306 tons while exports to Pondicherry State came to 135 tons. The quantities crushed in the oil mills and country chekkus were respectively 2739 tons and 404 tons. Wastages were calculated at 370 tons. The closing balance with the trade stood at 1763 tons at the end of the month.

Prices rose to high levels due to keen buying by crushers in and outside the district and ranged from Rs. 190/- to Rs. 215/- per candy of 531 lbs. according to quality.

Ramanathapuram District: During the month the arrivals, sales and stock of pods and kernels in the district were as follows:

Quantity in tons				
Name of market	Opening Stock	Arrivals	Disposals	Closing Stock
Groundnut pods:				
Virudhunagar	100	2100	1900	300
Groundnut kernels:				
Virudhunagar	700	5700	5100	1300

The following were the prices that prevailed for groundnut pods, kernels, oils and cake in the district during the month as compared to previous month:

Prices in Rs./nP.			
	June, 1960	May, 1960	
Groundnut pods (per Md. of 82 2/7 lb.)	Rs. 22 to 23.50	22 to 23	
Groundnut kernels (candies of 531 lb.)	„ 205 to 218	205 to 215	
Groundnut oil (candies of 500 lb.)	„ ...	358 to 360	
Groundnut oil cake (Md. of 82 2/7 lb.)	„ 12.37 to 14.71	12.37 to 14.04	

Tiruchirapalli District: Season: Except for light showers in some places, mainly dry weather conditions prevailed in the district. This has not only affected the standing crop of summer groundnuts but also affected the harvesting of summer groundnuts in many places.

Arrivals and Transactions: Arrivals of summer groundnuts was on the increase during the month in Jayankondan market. Stray arrivals in Karur and Ariyalur markets have been reported.

The average prices for groundnut kernels ruled at about Rs. 200/- per candy of 531 lbs.

North Arcot District: Season: The month opened with hot days and dry weather prevailed all over the district. However during the middle of the month, the weather took a favourable turn and strong

winds, cloudy weather and moderately scattered rains were received almost throughout the district. Sowing of winter groundnuts has commenced.

Arrivals and Transactions: The arrivals, disposals, stocks etc. in the district during the month were as follows:

Quantity in tons				
	Opening Stock	Arrivals	Disposals	Closing Stock
Groundnut pods ...	378.283	455.850	571.429	262.704
Groundnut kernels ...	226.039	723.033	790.552	158.550

Prices: The following were the price ranges of groundnut pods. Kernels and oils in various markets in the district during the month as compared to that of previous month.

	May, 1960	June, 1960
Groundnut pods (per 80 lbs.)	Rs. 21 to 23.50	Rs. 21 to 24.25
Groundnut kernels (candy of 531 lbs.)	„ 192 to 205	„ 192 to 213
Groundnut oil (candy of 500 lbs.)	„ 375 to 400	„ 375 to 402

Gingelly: (In this section Bag: 168 lbs.)

South Arcot District: Arrivals were mainly to Virudhachalam markets and the total arrivals amounted to 405 bags. Receipts from other districts and states totalled 254 bags. Despatches to other districts came to 45 bags while consumption by mills and chekkus was respectively 50 and 473 bags. The trade has a stock of 606 bags at the close of the month.

Prices: Prices ruled high and the average price per bag of 168 lbs. worked out to Rs. 81—69 at Virudhachalam market.

Tobacco: (A candy of 500 lbs.)

Coimbatore District: At the end of the month under report, there was a stock of 19,405 candys of chewing and 960 candys of cheroot tobacco. About 5495 candys of chewing and 285 candys of cheroot tobacco were exported to other districts of the state of Madras and to places in Bombay, Andhra, Mysore and Kerala States.

Tobacco market remained more or less steady during the month under report with routine demand from importing centres.

Prices: The prices that prevailed during the month are given hereunder:

Prices in Rs. per candy of 500 lb. or 226·80 k. grms.

Variety	I Grade	II Grade	III Grade
1. <i>Chewing tobacco</i>			
(Sun cured):			
(a) Meenampalayam	470—550	340—430	280—335
(b) Other varieties	410—480	290—390	210—275
2. <i>Cheroot varieties</i>			
Sun cured:			
(grown in Erode and Bhayani taluks)	410—500	250—400	200—350
3. <i>Chewing tobacco:</i>			
Pit cured (grown in Palladam & Sular areas)	200—280	175—195	90—150

Cardamom:

Madurai District: *Season:* Moderate rains were received in the Cardamom plantations in Madhurai district as well as in Kuala hills adjoining Madhurai district. The standing crop is reported to be good.

Arrivals and Transactions: The following were the opening stock, arrivals and despatches of cardamom during the month:

Names of Markets	Opening Stock	Arrivals	Sales	Closing Stock
(Quantity in lbs.)				
1. Bodinaickanoor	10,500	25,000	26,500	9,000
2. Thevaram	2,500	1,000	1,500	2,000
3. Pannaipuram	...	...	...	...
4. Kombai	...	...	...	...
5. Uthamapalayam	3,000	...	1,000	2,000
6. Cumbum	50,000	...	20,000	30,000
7. Gudalur	5,000	...	3,000	2,000
8. Pattiveeranpatti	1,000	7,500	8,000	500
9. Virudhunagar	50,000	15,500	22,500	43,000
Total	1,22,000	49,000	82,500	88,500

Prices:

1. Bodinaickanoor:

Name of quality.	Price in Rs./nP. per lb.
(1) Extra Green	9·87—10·28
(2) Green	9·50— 9·80
(3) Medium	8·90— 9·37
(4) Inferior	11·50—12·50
(5) Seeds	...

2. Pattiveeranpatti:

(a) Sundried:	
Superior and bold	9·40— 9·54
Medium and bulk	9·12— 9·32
Inferior and small	8·90— 9·10
(b) Store Green:	
Superior and bold	10·27—12·06
Medium and bulk	9·31— 9·98
Inferior and small	8·93— 9·29
(c) Splits	8·38— 8·91
(d) Lights	6·55— 7·52
(e) Seeds	8·02—12·04

3. Virudhunagar:

(1) Bold quality	10·37
(2) Smalls	9·00— 9·25
(3) Seeds	12·37

Review of administrative activities of Market Committees during June, 1960

The Market Committees of South Arcot, North Arcot, Coimbatore, Ramanathapuram, Tirunelveli and Tiruchy continued to function briskly during the month under report.

Enforcement: The progress of enforcement during the month were as detailed below:

Name of Committees	Section 5 (1)		Section 5 (3)		Weighmen	
	A	B	A	B	A	B
South Arcot Market Committee	103	1216	63	773	53	726
North Arcot Market Committee	169	1363	157	1289	47	597
Coimbatore Market Committee	188	1353	254	985	34	530
Ramanathapuram Market Committee	147	191	124	172	78	109
Tirunelveli Market Committee	12	25	12	28	12	22
Tiruchy Market Committee	120	1069	102	858	93	755

A = Licences issued during June, 1960.

B = " " up to the end of this month.

Meetings: The nominated committee of the Tiruchirapalli Market Committee held two meetings and disposed of 29 subjects. Among the subjects disposed of (1) decision to purchase land, buildings and machinery of Sri Gurucharam Rice Mill, Jayamkondam at a cost of Rs. 65,000/- with a view to permanently accommodate the regulated market, Jayamkondam there and (2) approving the annual report for the year 1959 were important. There were no meetings held on other markets committees under report.

Regulated Markets: The fourth Regulated Market has been established by the Tiruchirapalli market committee at Ariyalur during the month under report.

Quality Analysis: Nil.

Quality Competition: Nil.

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